CLAIMS:

1. (currently amended) A projection system, ~~comprising one or a number of projectors and a viewing screen, on said screen light diffusers for diffusing of projection rays being formed, characterised in that the light diffusers are adapted to capture the projection rays directed from an end face of the screen across its surface, and subsequently deflect said rays into a sector of observation of an image formed on the screen; and further comprises an optical system that transforms a projected image and registers cross sections of the projection rays with entrance pupils of the light diffusers formed on the screen so that to provide a depth of sharpness of the projected image over the entire screen surface.~~

comprising:

a viewing screen;

at least one projector disposed at about an edge of the viewing screen for projecting rays along a surface of the viewing screen, wherein the rays are projected at an acute angle to the surface;

a plurality of optical elements disposed on the viewing screen, wherein the optical elements have entrance and exit windows, and wherein the entrance and exit windows have areas that are substantially smaller than area of the viewing screen; and

means for aligning the cross sections of the projected rays with the entrance windows of the optical elements,

wherein the optical elements are configured to capture the projected rays whose cross sections are aligned with the entrance windows and to reflect or deflect the captured projection rays through the exit windows into a sector of observation.

2. (currently amended) The projection system ~~as claimed in~~ according to claim 1, ~~characterised in that the viewing screen is adapted to perform a projection from a screen end face onto the frontal and/or reverse, from the viewer side, surface of said screen, for which purpose the light diffusers are implemented in the form of protruding from, or recessed in the screen surface—mirrors, lenses, prisms for capturing, deflecting and diffusing the rays projected from a~~

~~screen end face.~~

further comprising a configuration for simultaneous viewing of different images from different viewing sectors, wherein the configuration comprises:

at least two projectors that are arranged to simultaneously project different beams of rays corresponding respectively to the different images, and

an optical arrangement of the optical elements for simultaneous capture of the different beams of rays from the projectors and for selective redirection of the different beams of rays corresponding respectively to the different images to respective different viewing sectors.

3. (currently amended) The projection system ~~as claimed in~~ according to claim 1, ~~characterised in that the viewing screen is provided with a light guide in the form of a flat parallel plate, or a laminate or multi-strip light guide that has a core having a constant refraction index, and end face entrance windows for inputting, into the light guide, the parallel projection rays; on the light guide surface, locally over the screen surface, disposed are light diffusers to output said rays out of the light guide in pre determined coordinates of formation of a screen image and to diffuse said rays into a sector of observation of said image, for which purpose a projector or projectors are provided with an optical system to form narrow parallel projection rays and to direct said rays through the light guide end faces into predetermined coordinates of incidence of the rays on the light guide reflecting planes so that to propagate the rays within the light guide by multiple internal reflection from its surfaces and to output the rays from the light guide by the light diffusers on the screen.~~

wherein the viewing screen comprises a light guide having a core and transparent entrance end-faces, and wherein the light guide is configured to receive the projected rays through the transparent entrance end-faces and to propagate the received rays through the core by internal reflection,

wherein the optical elements are configured on the light guide surface for selective capture and output of the propagated rays from the light guide at predetermined coordinates for screen image formation, and

wherein the projector comprises means for generating and directing a narrow beam of a plurality of rays onto the transparent entrance end-faces at preselected coordinates of incidence, where the preselected coordinates of incidence of a particular ray are selected for the passage of the

particular ray through the core to a corresponding optical element.

4. (currently amended) The projection system ~~as claimed in~~ according to claim 3, ~~characterised in that the screen light guide core narrows, wedge wise, from the light guide's entrance end face in the direction of propagation of rays in the light guide, the core having a constant refraction index and being coated with a cladding or an optical entrance window of a light diffuser having a constant or stepped refraction index whose value is lower than that of the core; for any version of embodiment of the light guide screen, the projector being provided with an optical system for formation of projection of rays of the projected image's various elements, which rays are characterised by different angles of entrance of these rays into the light guide end face for carrying out the selective outputting of these rays out of the light guide by the screen light diffusers within the appropriate coordinates of formation of a screen image and for subsequent diffusing of these rays by light diffusers into a sector of observation of the image.~~
wherein the core has a wedge-wise narrowed thickness in the direction of propagation of rays in the light guide from a transparent entrance end-face.

5. (currently amended) The projection system ~~as claimed in~~ according to ~~claim 4~~ claim 1, ~~characterised in that the entrance and exit windows of the screen light diffusers have a minimal area that is multiple times smaller than the screen area around said windows, and the screen area around the exit windows being coated with an anti flare opaque black layer, or on the screen between the light diffusers positioned is an opaque black mesh, or the screen area around the light diffusers being optically transparent or coated with a photochrome film to adjust the screen transparency using the ultraviolet background illumination,~~
wherein the viewing screen surfaces surrounding the exit windows comprise a treatment for absorption of parasitic illumination and spots, and wherein the treatment comprises any one of an anti-flare coating, an opaque black coating, an opaque black removable mesh, optically transparent viewing screen material, a meshwire optical filter cover, a photochrome coating that adjusts the transparency of the viewing screen by ultraviolet illumination, and any combination thereof.

6. (currently amended) The projection system ~~as claimed in~~ according to ~~claim 5~~ claim 1, ~~characterised in that~~ wherein the projector is equipped with a projection telephoto lens and an ~~anamorphotic~~ anamorphic cylindrical lens for a minimal magnification of a projection size, ~~for example a magnification~~ in height and simultaneous magnification of the projection size to the screen width, ~~the projector being positioned at a predetermined distance from the screen, and on the end face of the screen width positioned is a mirror~~ further comprising at least one retrodirective reflector disposed at about the edges of the viewing screen to deflect the projection into an edge of the viewing screen ~~edge end face, or the projector being disposed near the screen end faces, and on the opposite end faces of the screen being positioned the mirror reflectors for multiple reflection of the projection, so that to narrow the cross-section of the projection rays within the area of the light diffusers' entrance windows.~~

7. (currently amended) The projection system ~~as claimed in~~ according to ~~claim 6~~ claim 1, ~~characterised in that with~~ wherein the at least one projector is a transparency projector, ~~and the screen are provided an optical system for transforming the projection images and for narrowing the cross section of the projection rays without the use of projection lenses and transforming anamorphotic lenses, for which purpose~~ the projection system further comprising an illuminator of transparent projected images, ~~in the transpareney projector, is provided with~~ in an optical arrangement ~~to form~~ that provides background illumination of projector slides by thin rays that diverge fan-wise, the cross-section of which rays being broadened within sizes of the area of entrance windows of the optical elements, ~~lightdiffusers~~ whereby the projection images are transformed and the cross-section of the projection rays is narrowed without the use of projection lenses and transforming anamorphic lenses.

8. (currently amended) The projection system ~~as claimed in~~ according to ~~claim 7~~ claim 1, ~~characterised in comprising one or several stereo projectors and a stereo screen having light diffusers and a lenticular raster to carry out the spatial selection of the left and right images of a stereo couple into the zones of vision of the left and right images of a stereo couple by, respectively, the viewer's left and right eyes; and for the purpose of an easy, without the use of spectacles, viewing of stereo images at any aspect or in case when viewers move in a lateral direction; the system being provided with a semi-automatic manually controled corrector or an~~

~~automatic corrector coupled to a sensor for tracking the viewers' eyes coordinates, said semi-automatic or automatic correctors comprising a drive for carrying out various versions of correction of the stereoscopy system, for example by way rotating the stereo screen about its vertical axis, or by displacing the lenticular raster, or displacing the stereo projectors along the screen.~~

wherein the at least one projector is a stereoscopic projector, wherein the viewing screen is a stereoscopic screen comprising a lens raster for spatial selection of the left and right images of a stereo couple into the viewing zones of the left and right images of the stereo couple by a viewer's left and right eyes, respectively, and wherein for the purpose of viewing of stereo images without the use of spectacles and when viewers move in a lateral direction, the system further comprises a correction system for conjugating the zones of viewing of the left and the right images, the correction system comprising:

a sensor that tracks the coordinates of the viewers' eyes; and

a coupled drive for movement of components of the projection system in response to the sensor, wherein the movements of the projection system comprise one of rotation of the stereoscopic screen about its vertical axis, shifting of the lens raster, shifting the stereoscopic projector along the viewing screen and any combination thereof.

9. (new) The projection system according to claim 3, wherein the core has a substantially constant refractive index, wherein the core is covered by a cladding layer having a constant or step-wise varying refractive index that is less than the refractive index of the core, and wherein the entrance windows of the optical elements comprise material having a constant or a step-wise varying refractive index that is less than the refractive index of the core.

10. (new) The projection system of claim 3 wherein the light guide comprises one of a flat parallel plate light guide, a laminate light guide, and a multistrip light guide.

11. (new) The projection system of claim 1 wherein the optical elements comprises at least one of spherical micro-mirrors, microlenses, and micro-focones.

12. (new) The projection system of claim 1, wherein the at least one projector provides a transformed projection of an image, further comprising a planar mirror disposed at an edge of the viewing screen, the planar mirror having a reflective area for reflecting the transformed projection of the image provided by the projector toward the screen at an acute angle.

13. (new) The projection system of claim 1, comprising a plurality of mirrors disposed on the opposite edges of the viewing screen for multiple reflection of the projected rays, whereby a narrow cross-section of the projection rays within the area of the optical elements' entrance windows is achieved.